AU/ACSC/053/2001-04

AIR COMMAND AND STAFF COLLEGE

AIR UNIVERSITY

REDUCING THE FORCE PROTECTION CONTINUITY GAP CREATED BY THE AIR EXPEDITIONARY FORCE

by

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A Research Report Submitted to the Faculty

In Partial Fulfillment of the Graduation Requirements

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April 2001

Report Documentation Page

Report Date	Report Type	Dates Covered (from... to)
01APR2001	N/A	-

Title and Subtitle Reducing the Force Protection Continuity Gap Created by the Air Expeditionary Force	**Contract Number**
	Grant Number
	Program Element Number
Author(s) Harris, Paul D.	**Project Number**
	Task Number
	Work Unit Number
Performing Organization Name(s) and Address(es) Air Command and Staff College Air University Maxwell AFB, AL	**Performing Organization Report Number**
Sponsoring/Monitoring Agency Name(s) and Address(es)	**Sponsor/Monitor's Acronym(s)**
	Sponsor/Monitor's Report Number(s)

Distribution/Availability Statement
Approved for public release, distribution unlimited

Supplementary Notes
The original document contains color images.

Abstract

Subject Terms

Report Classification unclassified	**Classification of this page** unclassified
Classification of Abstract unclassified	**Limitation of Abstract** UU

Number of Pages
37

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Preface

After 24 years in the security forces career field, I have developed a deep appreciation for the importance of ensuring troops are prepared before they are sent into harms way. My experiences as an enlisted instructor at Volant Scorpion, the project officer for the AF ground involvement in the US Army Joint Readiness Training Center (JRTC), two years in Korea, and recently the commander of Silver Flag Alpha, have all shaped my conviction that if training does not impact a person's abilities, it is a waste of time. The obvious benefits of using training technologies make its utilization inevitable. My concern is that we use and invest in this tool wisely and not just fool ourselves into thinking we care about the troops because money was thrown at the force protection problem.

I want to thank Capt Mark A. Archuleta of the Force Protection BattleLab for his assistance in helping me acquire the current status of training technology projects within the security forces career field. Also, I want to give special thanks to Lt. Col. Ladonna Idell for her advice and guidance in helping me negotiate the Air Command and Staff College research process.

Abstract

While the new Aerospace Expeditionary Force (AEF) concept is a bold step in reducing the operations tempo of Air Force personnel, the change in the way forces are rotated into deployed locations creates a continuity gap for those who perform the force protection mission. Before the AEF concept was instituted, small teams of new arrivals were continually integrated into the established security force which ensured at any given time the majority of the force had a month or more of experience working at the deployed location. This afforded the luxury of relying on those with experience to help get new people up to speed on the terrain, local procedures, and emergency actions. Under the AEF, this gradual ability to familiarize people with the location does not exist because of the nearly complete changeover of personnel every 90 days with only a few days overlap with the departing forces. This sudden loss of nearly all experience at the worker level reduces the force protection effectiveness during the period the new arrivals are gaining the necessary familiarity of the local terrain, and knowledge of vulnerabilities, unique threats and procedures. This paper addresses this problem by examining current and developing computer modeling and simulation technologies which can be employed during pre-deployment training to reduce the time required to get the force protection team fully operational once they arrive at a deployed AEF location. It will also allow senior leaders in the security forces career field to make more informed decisions on the employment and procurement of training technologies.

Chapter 1

Introduction

> *No deployment of American service members is risk free, and we must remain clear in our purpose and resolute in its execution. And while we must continue to reassess the costs and benefits of any operation as it unfolds, reflexive calls for withdrawal of our forces when casualties are incurred would simply encourage rogue actors to try to force our departure from areas where there are U.S. interests by attacking American troops.*
>
> —President William J. Clinton
> 1996 National Security Strategy

The implementation of the Air Expeditionary Force (AEF) was a bold first step in trying to create a stable and predictable lifestyle for all the members of the AF.[1] As Secretary of the Air Force F. Whitten Peters said, "We will never fix our retention rates unless we can guarantee people that in peacetime they will have a personal life."[2] While an extremely positive move in preparing the Air Force for the 21st century, as with any new change of this size, other problems are created which were not anticipated. One such problem is the continuity gap within a theater of operations created by the nearly complete changeover of personnel providing the force protection mission at deployed locations every ninety days. No longer do new arrivals have the luxury of relying on the experience of those who truly know the terrain, local security procedures, and emergency actions to help guide them until they sufficiently learn the job. This lack of local experience puts newly deployed AEF forces at an increased risk during the period the new defense force is striving to reduce the knowledge void created by the departing forces.

To reduce the vulnerability created by this continuity gap, it is imperative to incorporate the advances in computer simulations and modeling training into the force protector's pre-deployment training.

Need for Study

Currently Security Forces pre-deployment training is not realistic and does not provide sufficient knowledge of the deployed location to effectively operate under the AEF concept.[3]

Purpose

This paper is intended to provide information for the senior leadership in the security forces career field to assist them in making more informed decisions on the employment and procurement of computer simulation and modeling technologies. In particular, it proposes a focused approach to utilizing these technologies to provide just-in-time training for security forces preparing to deploy into unfamiliar surrounding and high threat areas. Because of the importance of force protection, resources will inevitably be applied in an attempt to counter the devastating effects of an attack against deployed American resources and people. A 1997 Security Forces Directorate white paper stated, "The Air Force force protection investment should be threat based and programmatically sustained, rather than episodic. Force protection must be a long-term investment program."[4] The goal of this paper is to assist decision-makers use these resources as wisely as possible.

Assumptions

1. Force protection will continue to be a major concern and priority for both the military and political leadership.

2. The current AEF system for sustaining forward operating location through the rotation of forces every 90 days will continue to be strategy for controlling operations tempo.
3. Resources will be expended in an attempt to exploit the vast training opportunities becoming available through the advances in technology in an effort to reduce AEF force protection vulnerabilities.

Scope and Limitations of Study

While training technologies promise excellent benefits in the training of force protection for the entire force, because of limited time and resources, this paper is very limited in scope and focuses only on security forces being rotated into AEF locations. This focus is further limited to concerns of the continuity gap created between the departing security forces and those being rotated into AEF environments as replacements. Other career fields may benefit from the proposed training systems, but the limitations of time and space in this paper preclude consideration here.

Overview of Argument

The continuous changeover of personnel at deployed AEF locations creates a situation in which continuity at the airman and NCO level is nearly wiped out once every 90 days. These shortened deployment periods combined with the nature of force protection, allows insufficient time to train security forces to the desired level of proficiency while they are deployed.[5] The familiarity of the security force with local terrain, procedures and emergency actions has a direct impact on the effectiveness of force protection efforts. The current AEF rotation policy does not allow this necessary learning to take place.

As technology is incorporated into training, it is not sufficient to focus on just the general knowledge needed by the force protection force. Emphasis must be placed on sending force protection professionals to the theater of operations with as much knowledge of local procedures and the deployed environment as possible. While the total elimination of this experience or continuity gap is not possible, properly using training technologies during pre-deployment training can reduce the gap and provide deployed AEF forces with a more consistent level of force protection.

Notes

[1] Secretary of the Air Force Whitten F. Peters, "The Expeditionary Aerospace Force: A Journey, Not an End," *Air Force News*, n.p.; on-line, Internet, 27 December 2000, available from www.af.mil/eaf/journey.html.

[2] Idid., n.p.

[3] Captain Mark A. Archuleta, "Simulation, Modeling, and Analysis to Ready the Team for Force Protection (SMART FP)," Kenny Battlelab Initiative, 14 September 2000, 1.

[4] Security Forces Directorate, Headquarters United States Air Force, *USAF Force Protection and Security Force Requirements: A Vision for the 21st Century,* white paper, June 1997, 7.

[5] Archuleta, 1.

Chapter 2

Background

> *Every man in an Air Force uniform ought to be armed with something—a rifle, a tommy-gun, a pistol, a pike, or a mace;…Every airman should have his place in the defence scheme…It must be understood by all ranks that they are expected to fight and die in the defence of their airfields.*
>
> —Prime Minister Winston S. Churchill
> The Second World War, Vol. III: The Grand Alliance, 1950.

Doctrine is the fundamental way a military thinks about and trains for military operations so it is surprising that Air Force doctrine did not address force protection until the September 1997 publication of Air Force Doctrine Document 1.[1] As late as 1992, USAF aerospace doctrine still only represented an airman's view of war as concentrating on the opposing air threat.[2]

The devastating 1996 terrorist attack that killed 19 service members at Khobar Towers, has driven a shift in perspective not only in the Air Force but also throughout the Department of Defense (DOD). Increased emphasis was placed on force protection by Joint Pub 3-0, *Doctrine for Joint Operation*s, which states "the protection of friendly forces will often be a friendly center of gravity during early entry operations."[3] Joint Vision 2020 took it even further with Full Dimensional Protection as one of the four operational concepts needed to achieve the goal of Full Spectrum Dominance. [4]

Importance of Force Protection

Force Protection Defined

Force Protection is defined as, “a collection of activities that prevents or mitigates successful hostile actions against Air Force people and resources when they are not directly engaged in combat air operations against the enemy"[5] Active and passive defensive force protection provides defensive countermeasures against perceived or actual threats and, if necessary, serves to deny or counter hostile forces in the act of targeting USAF assets. According to force protection doctrine, security forces are expected to defeat, delay, or mitigate threats which include sabotage of air or ground operations conducted by special-purpose, guerrilla, and unconventional forces or small tactical units. The ability of security forces flight and squad leaders to make correct tactical decisions in addressing such threats is developed in field training exercises. Because of real world commitments, OPSTEMPO, manpower shortages, and the costs of assembling large numbers of personnel and equipment, the frequency of such field training exercises is decreasing.[6]

History

Air base defense and force protection are critical to employing air and space power, but have historically been hampered by an institutional Air Force bias against the necessity for indigenous ground combat forces to be fully integrated with air operations.[7] Additionally, the aircraft provides the majority of the Air Force's ability to meet its global reach, global power, and deterrence responsibilities for the nation. A single ground attack, successful penetration, or moment of enemy control could be disastrous for American airpower[8]and throughout the history of military aviation, airfields and bases have come under the threat of enemy action in one form or another. [9]

Table 1. Ground Attacks on Airfields 1940-1992

Conflict	Number of Incidents	Aircraft Destroyed/ Damaged
World War II	130	367/NA
Korea	3	0
Vietnam	493	393/1185
Falklands	1	11
El Salvador	2	15/18
Grenada	2	0
Afghanistan	3	9
Panama	4	1
1991 Gulf War	3	36
Philippines	1	2/1
Terrorism	3	9/3
TOTAL	645	843/1207

NA = data not available

Source: Alan Vick, *Snakes in the Eagles Nest: A History of Ground Attacks on Air Bases*, (Santa Monica, CA: RAND Corp., 1995), 19.

Impact of Khobar Towers

The attack on Khobar Towers complex at Dhahran, Saudi Arabia provides a clear indication of the change in potential threats to U.S. forces and facilities. On 25 June 1996, terrorist detonated a bomb with an estimated likely yield of more than 20,000 pounds of TNT-equivalent explosives just outside the fence of the American occupied sector of Khobar Towers, killing 19 service members and injuring hundreds more.[10]

In the aftermath of the Khobar Towers incident, Secretary of Defense Perry acknowledged a lack of emphasis on force protection while indicting the structure that permitted it to occur. Secretary Perry admits "putting force protection up front as a major consideration along with other mission objectives around the world will require a fundamental change in the mindset with which we plan and carry out operations. It also requires structural changes in the Department."[11]

An independent review of the bombing by USAF Lieutenant General Record, simultaneously acknowledged a lack of emphasis on force protection. He stated, "Force

protection in the ground environment is now an additional essential element of the equation that leads to mission accomplishment. Force protection is an absolute requirement…For example, force protection at the source of sortie generation is as essential to successful mission accomplishment as is force protection over the battle area. If the sortie never leaves the ground, then the force projection mission cannot be accomplished."[12]

The catalyst for today's much-needed organizational transformation appears to be the Khobar Towers tragedy. It caused an immediate, widespread reaction to include a new AF policy on force protection and an increase in the AF self defense capabilities.[13] Secure bases are a prerequisite for airpower operations and therefore ensuring that they are available is a primary responsibility of USAF leadership.[14]

The Force Protection Continuity Gap

The AEF rotation schedule, combined with the requirement for geographically separated security forces units to deploy and operate as cohesive teams, impairs the ability to conduct team training prior to deployments. Currently, security forces are not receiving the training required to maintain the highest levels of proficiency and there is no cohesive ground training beyond field exercises for tactical combat decision making available to deploying Air Force personnel.[15]

Importance of Experience

Practical experience in performing the force protection mission reduces risk and potentially saves lives. Security forces have a wide array of missions that include providing internal security for mission critical resources, the maintenance of law and order, corrections, anti-terrorism, weapons training and maintenance, air base defense, protection of classified information, and product protection through the acquisition cycle. Each of these missions

requires specialized training and experience for the narrowly focused subsets of the overall security mission.[16] The reality of conducting training for any of these missions is that much of the knowledge necessary to be effective is location specific.

When incorporating new people into a security forces organization, things unique to the particular location in air base defense, force protection, law enforcement and security must be taught. Traditionally this training is accomplished by teaming a new person with an experienced person. Even at a state side location, it would not be practical to expect a new arrival, with only a couple days on the ground, to obtain a sufficient working knowledge of local policies, procedures, terrain, facilities, and emergency actions to function independently without assistance of an experienced person. When the variables of the higher threat and host nation concerns of the AEF environment are added, it is even less practical to expect a new person within a couple days to be as effective as a person with months of practical experience working at the deployed location.

Impact of the AEF

The AEF is the answer to the USAF becoming a more CONUS based expeditionary force. It makes sure that the nation has the trained aerospace forces it needs and ensures relief from operations tempo (OPSTEMPO) in a turbulent world.[17] Using AEF, the AF has reduced the need to maintain forces forward deployed on a permanent basis while reducing personnel tempo (PERSTEMPO) and providing a greater flexibility in force projection options.[18]

Although the AEF is light, rapidly deployable, and highly capable, it still must occupy permanent air bases once in the theater of operations. The physical properties of an air base do not change just because it is supporting an AEF. The air base support structure will still consist of aircraft parking areas, maintenance and operations areas, fuel and ammunition stocks,

runways, and personnel support areas.[19] The reduced "footprint" of the AEF in personnel and equipment lessens the vulnerability of the force in the sense that fewer potential targets are present at the air base.[20] However, reducing the package size does not automatically reduce the support requirement equally. Since the physical dimensions of the air base do not change based on the size of the force occupying it, the force protection mission may actually be more difficult because a smaller number of personnel must protect the same area.[21]

Prior to the AEF, security forces that replaced the departing personnel at forward operating deployed locations were rotated into the theater of operations using a continuous flow of small teams to ensure continuity on the ground was always maintained. This ensured the majority of the security force at any given time had a couple of months of experience on the ground. The new AEF rotation policy allows only a couple days overlap and causes a loss of virtually all the experience personnel each 90-days.

Limitations of the 820th Security Forces Group (SFG)

The 820th SFG is billed as the AEF force protectors. This highly trained and mobile security force closely resembles the highly successful Vietnam era Operation SAFESIDE (Test) and incorporates various elements of the RAF Regiment organizational structure.[22] It is a multifunctional security unit, with seven permanently attached flights, which can rapidly deploy in support of an AEF. The primary job of the 820th SFG is to deploy in advance of the Aerospace Expeditionary Wing (AEW) and establish base security. The unit has training and coordination advantages over the normally ad hoc deployed security units because of its permanent organization.[23]

The problem with this highly trained force is its requirement to be rotated out after 90 days and replaced by troops from normal security forces units.[24] Although this unit is an outstanding

asset, the continuity and experience gap is even more dramatic when it is employed because replacements will almost certainly have less training.

Notes

[1] Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine,* September 1997.

[2] Air Force Manual (AFM) 1-1, *Basic Aerospace Doctrine of the United States Air Force,* vol. 1, March 1992, 16.

[3] Joint Publication 3-0, *Doctrine for Joint Operation*s, 1 February 1995, IV-5.

[4] Joint Vision 2020, June 2000, 2.

[5] USAF Force Protection Doctrine Document 2, 29 October 1999, 4-1.

[6] Captain Thomas M. Harris and Dr. Joseph Weeks, *Distributed Mission Training–Force Protection,* AFRL/HE 6.3 White Paper Investment Planning Sheet, 24 April 2000, 1.

[7] Major William P. Delaney, *USAF Force Protection: Do We Really Care?*, (Maxwell AFB, Al.: Air Command and Staff College, 1998), vii.

[8] Idid., 1-2.

[9] David A. Shlapak and Alan Vick, *Check Six begins on the ground: Responding to the Evolving Ground Threat to U.S. Air Force Bases,* (Santa Monica, CA: RAND Corp., 1995), xvii.

[10] USAF, *Air Force Review of Gen. (Ret.) Downing Report - Khobar Towers Bombing,* 31 October 1996, 2.

[11] Secretary of Defense William R. Perry, To President and Congress. Letter. Subject: *Report to the President and Congress on the Protection of U.S. Forces Deployed Abroad,* 16 September 1996.

[12] Lt Gen James F. Record, *Independent Review of the Khobar Towers Bombing,* 31 October 1996, n.p.; on-line, Internet, 10 December 2000, available from http://www.af.mil/current/khobar/recordf.htm.

[13] Delaney, 33.

[14] Shlapak et al, xvii.

[15] Harris et al, 1.

[16] Delaney, 15.

[17] Peters, 1.

[18] Stacy Evers, "Interview with Air Combat Command C-in-C Gen. Richard Hawley." *Jane's Defense Weekl*y, 16 April 1997, 32.

[19] Shalpak et al, 15.

[20] Headquarters United States Air Force, *Global Engagement: A Vision for the 21st Century Air Force*, (Washington, DC: Government Printing Office), n.d., 16.

[21] Major Clifton L. Dickey, *Air Base Defense for the Air Expeditionary Force: More Than Defending the Redline*, (Maxwell AFB, Al.: School of Advanced Airpower Studies, 1998), 13.

[22] Delaney, 35.

[23] Air Force Instruction (AFI) 31-304, *Air Base Defense 820th Security Forces*, 1997, 2.

[24] AFI 31-304, 2.

Chapter 3

Using Technology to Train

"...by leveraging the advantages information technology offers...every airman [will have] access to rich training resources, simple and intuitive self-service web-based tools, and the ability to communicate [and train] reliably, securely, globally all the time."

—General Michael E. Ryan
USAF Chief of Staff
Commander's NOTAM 00-5

The U.S. military must rehearse and exercise its options if it is to remain potent in today's vastly complicated and dynamic environment. But extensive field training with troops and equipment in the real world is both expensive and dangerous, which is a key reason to use virtual or computer-generated battlefield exercises.[1]

The Commitment to Technology

Computer simulations and information technologies have been incorporated into training programs throughout DOD since the early 1950's when the Air Force started using computers in flight simulators.[2] Today, all the services use the advantages of simulation technology to train. The Air Force has the Contingency Theater Automated Planning System, sailors aboard ships train in a simulated world using the Battle Force Tactical Training System, and Army reservists can train in M-60 tanks using the Guardfist Training System.[3] But the services are showing even a greater commitment to investing in these technologies to prepare their forces to withstand the stresses of combat and to win.

For example, in August 1999, the Army signed a $45 million contract with the University of Southern California to leverage advances in modeling and simulations technologies to improve the realism of training simulators.[4] The system will permit soldiers to do en-route mission rehearsals immersed in high-fidelity images of the actual terrain to which they are about to deploy.[5] Also, the Navy is investing $50 million to $60 million with the entertainment industry that builds the high-tech attractions for Disney and Universal Studios to create a virtual reality battle station exercise facility for their final recruit graduation exercise.[6] Both of these examples demonstrate a huge commitment to developing training technologies for the future.

Current Training Technologies

The US military makes the most of the virtual environments and computer simulations. The Army, Navy, Marine Corps, and Air Force all use the same simulation protocol, the Distributed Interactive Simulation (DIS), but the simulations are not yet seamless. In 1996 the US military began work on the Joint Simulation System (JSS) to create a single distributed virtual environment for joint training of all four services.[7]

Web-based Training

Both the military and the private sector are increasingly using web-based training because it is convenient, saves resources, can be taken anywhere, and allows for better control of the training process.[8] The Gartner Group Inc. predicts that technology-based training, which includes CD-ROM and desktop video conferencing, will represent half of all training by 2002.[9] These web-based training tools are already helping to prepare deploying AEF forces.

The AEF Center at Langley AFB, VA, has the mission of assisting AEF operations by the sourcing assets, identifying and refining requirements, monitoring readiness, and guiding

deployment and redeployment planning.[10] They have developed AEF Online, a web site that features training templates that airman can access to obtain information on actions they need to complete specific to their career field. The site also provides information on force protection and geopolitical issues, lessons learned from previous rotations and links to related news articles. Conducting briefings and training on this side of the ocean also has positive implications for training the large number of reserve forces[11] which currently accounts for approximately 10 percent of the AEF taskings.[12]

One advantage of web-based training is trainees don't have to sit in a classroom for eight hours. Instead they could do small portions of the training an hour here and three hours there. Online training also eliminates the need for keeping libraries of CD-ROM-based courses in-house and improves training administration by centrally tracking student performance.[13]

Virtual Reality

The military has been the leader in simulation technology until recently when the entertainment industry has become the biggest user.[14] The DOD and the entertainment industry are sharing a growing interest in computer-based modeling and simulation such as video games and virtual reality attractions. While virtual-reality games and military training serve different purposes, both rely on advances in three-dimensional graphics that allow many players to interact simultaneously.[15] The immersive displays, three-dimensional sound and other types of virtual reality interfaces, can be used to create realistic virtual environments that closely simulate the real world environment that students are being trained for.[16]

Figure 1 Example of Virtual Reality [17]

Simulations for military and entertainment purposes are outwardly similar but different in pivotal ways. Theme parks strive to provide the same experience over and over again but the military simulations have to provide alternative outcomes in order to get the full effect. Entertainment simulations move large groups through quickly while military simulations have to be much longer, hours compared to minutes, and react to individuals as well as group actions. Entertainment simulations also have to be 110% safe while the military simulations have to be safe but they can reasonably be expected to dole out a few bumps and bruises.[18]

Virtual reality training has already progressed to the point multiple virtual environment displays, multiple students, and multiple agents can operate at the same time.[19] The best example is an Army system where soldiers have motion transmitters on their cap and rifle which lets a computer monitor their moves and viewpoint continually and update the display. Soldiers separated in individual areas are merged together by the computer to put them in the virtual environment.[20]

Figure 2 US Marine Using Simulator[21]

Figure 3 View from Other Participants[22]

When training specific skills in a virtual environment, it is not enough to concentrate on fidelity and accuracy of the simulated behaviors; the environment should help trainees develop an understanding of the task and should provide guidance and assistance as needed.[23] In order to make virtual reality effective as a training tool, one must consider how the environment supports

the delivery of instruction and facilitates effective learning experiences. The problems that arise from unguided interaction with simulation-based learning environments have been well documented. If a person does not know how to complete a task, the process can get bogged down and the student learns to perform the task incorrectly.[24]

There are three ways to correct the problem. First, human instructors can constantly monitor the process and provide guidance and instruction. This system has a heavy impact on the instructor's time and can limit student access to the program. The second approach is called collaboration learning, in which a group of students work together in the virtual environment. Collaboration is definitely appropriate (and even necessary) for some learning situations, such as team training. The third way is to develop a virtual reality training agent known as Soar Training Expert for Virtual Reality Environments (STEVRE). This agent shares the virtual space with the students and can demonstrate tasks, offer advice, and answer questions. Multiple STEVRE agents and students can inhabit the same space. When fully developed, STEVRE architecture will support team training, thus enabling students and agents to work together on multiple tasks.[25]

Improved Realism

The more realistic the geometry and textures of 3D objects in computer simulations, the more likely it is that the simulations will succeed as effective training tools.[26] CamSys is a company in the process of developing a portable video-based 3D data acquisition and processing system that employs a camcorder equipped with a Differential Global Positioning System (DGPS) and electronic compass, and a laptop computer. The custom software will then be implemented to perform such data processing tasks as edge detection and line-segment identification, line-segment correspondence, 3D-geometry calculation, and texture extraction.[27]

The 3D images resulting from the CamSys system will differ from those used in most existing simulations in that they will be acquired from real objects and surroundings. This will create images similar to 3D digital photographs and streamline the development of virtual reality simulations.[28]

Force Protection Training Technology Projects

Both the Air Force Research Laboratory and the Force Protection Battlelab are aggressively working initiatives to develop technology based training programs to reduce shortcoming in force protection training. While both use computer modeling and simulation, each takes a slightly different approach toward training security forces.

Distributed Mission Training–Force Protection

The Air Force Research Laboratory is working a virtual reality training system called distributed mission training (DMT).[29] Historically, DMT products have been focused on training in the aerospace environment and ignored training in the ground environment where security forces train and fight, and where force protection begins and ends.[30] The concept of the initiative is to expand on the technology used in the Combat Automated Training System (CATS) which is currently used by many security forces units to improve marksmanship. Computer, visualization, and communications technologies have matured to provide an opportunity to improve CATS and increase its training utility by interconnecting systems to present a common synthetic battle space environment for several training applications. This DMT application will include combat arms training for fire team members in both day and nighttime environments, intra-team coordination training, inter-team coordination training, and training in combat tactical decision making for flight and squad leaders.[31]

The strategy in developing the combat tactical decision making system is to team the government and contractors who will focus on off-the-shelf products to minimize development costs. The government will provide force protection subject matter expertise, conduct a training task analysis for both tactical leadership and team skills, and conduct an analysis with the current CATS. The CATS contractor will determine if the current CATS systems' networking architecture and protocols will be sufficient to conduct this training research program. If the current CATS system networking architecture and protocols are not sufficient, the Air Force Research Laboratory will work with the CATS contractor to develop the necessary protocols and architecture to interconnect the combat arms simulation training systems. Once the architecture and protocols are sufficient, a combat decision-making (Force Protection Command and Control) training system will be designed using constructive simulations that focus on training flight and squad leaders in combat tactical decision making.[32]

The anticipated benefits of this $2.7 million dollar project[33] include an efficient, effective, and affordable training tool to supplement field training exercises, provide mission rehearsal capabilities, and increase the survivability of security forces fire teams, improve readiness of security forces leadership, enhanced coordination and deconfliction of security forces unit action, and increased survivability of air expeditionary forces.[34]

SMART FP

Simulation, Modeling, and Analysis to Ready the Team for Force Protection (SMART FP) is a Force Protection Battlelab initiative to implement innovative technologies to enhance pre-deployment training and raise awareness of force protection concepts and ideas. The SMART FP initiative was specifically developed to address the problem of increased turnover and lack of continuity that has resulted from the new AEF deployments. Because of the massive turnover of

people and insufficient time to train once in the deployed area, a need was identified to provide critical, emergency-response type training before deploying.[35]

The SMART FP initiative has three pillars to accomplish this objective: visualization, intelligence, and distributed mission training. The visualization component uses revolutionary training technologies such as virtual reality, modeling and simulation, and three-dimensional modeling to familiarize personnel with the defense posture at the deployed location. The focus is to provide site-specific familiarization with the terrain, installation, critical resources, restricted areas, sectors, posts, entry control points, weapon and sensor capabilities, etc.[36] This web-based, Force Protection Internet Portal (FPIP) will provide unclassified information about deployed locations, computer based training (CBT) modules, and general information about force protection.[37]

The second component is intelligence. This portion will garner support from various intelligence organizations to create a web-based information resource for force protection products. The focus is to provide a full spectrum of force protection information from basic information found in Air Force doctrine and instructions to detailed information about the threat, likely targets, host nation disposition/culture, terrorist groups (capabilities, activities, incidents), order-of-battle, etc.[38] This portion creates a Force Protection Secret Internet Protocol Router Network (SIPRNET) Portal (FPSP) which is a more robust, classified version of the FPIP that will be hosted on the SIPRNET, and if necessary distributed on CD-ROM.[39]

The third component expands on the DMT initiative sponsored by the Air Force Research Laboratory. This DMT component will use distributed, force-on-force simulations to develop, evaluate, and validate operational tactics; exercise command and control; conduct course-of-action analyses, and accomplish mission planning and rehearsal to counter the postulated threat.

The focus is to provide the command and control element a comprehensive look and an opportunity to exercise communications, standard operating procedures, rules of engagement, host nation restrictions, base defense plans, etc.[40] The DMT system will allow the warfighter to train in a networked, virtual environment on demand, individually or collectively, and in conjunction with operational exercises using modeling and simulation technologies.[41]

Once the initiative is developed and proves its capability, the Force Protection Battle Lab envisions transferring the SMART FP products, processes, and capabilities to the AEF Center or regional training centers, as appropriate.[42]

Notes

[1] Clark R. Karr and Douglas Reese, "Synthetic Soldiers," *IEEE Spectrum* 34, no. 3 (March 1997): 40.

[2] "Flight Simulators"; *Encyclopedia Britannica*, on-line, Internet, 15 January 2001, available from www.britannic.com/bcom/eb/articale/7/0,5716,35207.

[3] Karr et al, 40.

[4] Paul Boyce, "USC to Put 'Virtual Reality' Into Army Training," *Program Manager* 28, no. 5 (September/October 1999): 40.

[5] Idid., 40.

[6] John Flink, "Battle Stations Training Goes Virtual Reality," *Navy Times* 49, no.30 (1 May 2000): 15.

[7] Karr et al, 40.

[8] Marianne Kolbassuk McGee, "Train on the Web," *Information Week*, 25 January 1999, 101.

[9] Idid., 102.

[10] Capt Wilson Camelo, "'EAF Online' Offers Electronic Gateway for AEF Deployments," *Air Force News*, 13 April 2000, n.p.; on-line, Internet, 27 December 2000. Available from www.af.mil/newss/Apr2000/n20000410_ 000549.html.

[11] Idid., n.p.

[12] Idid., n.p.

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[34] Idid., 2.
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[37] Archuleta, Initiative, 1.
[38] Archuleta, Talking Paper, n.p.
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Chapter 4

Recommendations/Conclusion

"The Romans are certain of victory….because their exercises are battles without bloodshed, and their battles bloody exercises."

—Historian Flavius Josephus
AD 37/38–AD 100

Recommendations

1. Focus on Reducing the Continuity Gap

To reduce the AEF force protection continuity gap, a new training paradigm must be used to ensure the drop in experience that occurs between rotations is reduced to an acceptable level. Instead of only focusing on basic tactical skills, an in-depth study should be conducted to determine what a knowledgeable and experienced person who has been doing the job knows and compare that to what his or her replacement knows when arriving at the deployed location. This will provide two baselines and establish a measurable difference that can be used to develop specific training standards for creating a truly effective pre-deployment training program. All training programs and simulation scenarios should focus on moving the trainee from a person knowledgeable in common security forces skills to someone who is intimately familiar with the terrain, threat and local procedures at the deployed location. This training focus will reduce the

spin-up time required, increase confidence of the security forces and reduce the chance security breakdowns will occur during the early portion of the rotations because of the lack of experience.

2. Support SMART FP

The Force Protection Battlelab is right on target in their efforts to develop a training program to support AEF pre-deployment training and should be supported with funding. The three-phased approach is the most logical way to meeting the different levels and methods of training required to prepare the force for deployment. The web-based Force Protection Internet Portal will provide much needed unclassified information about deployed locations, computer based training modules, and general information about force protection. This will provide security forces with the local knowledge to perform the job, i.e., host nation identifications, vehicle entry procedures, local duress procedures, external controls, key facility locations, restricted area boundaries, defensive fighting position locations, patrol zones, communication call signs/procedures, emergency procedures, etc.

Second, the Force Protection SIPERNET Portal with its classified capability will educate forces on detailed threat information before they arrive in the high threat areas commonly associated with the AEFs. This information is critical in preparing security forces to recognize and react to the unique threats at the deployed location, local terrorist group's mode of operandi, force protection vulnerabilities, and current ground intelligence. In addition, current threat information can be provided to follow-on forces from the actual deployed location in near real time.

Third, teaming with the Air Force Research Lab in acquiring a DMT system for force protection will allow the warfighter to train in a network, virtual environment on demand, individually or collectively, and in conjunction with operational exercises using modeling and

simulation. This portion counters the problems caused by the loss of practical experience that is normally gained over time through trial and error in local practical exercises, by providing a means to develop decision making and analytical skills through the use of computer simulations.

3. Utilize the CamSys Technology

The new technology the CamSys company is developing appears extremely applicable to developing virtual reality products for force protection training. The characteristics of this technology include the ability to map bases using a camcorder and quickly transcribe the images into computer models. This would immensely aid security forces preparing for deployment. Airfield surveys throughout the world could be made using this technology and stored for retrieval and training at the first indication of a potential deployment. Databases for well-established forward operating locations, such as those in Southwest Asia, could be periodically updated to ensure follow-on forces have the most accurate information on local conditions possible. Also, when the 820th SFG deploys with an AEW, within a few weeks of being on the ground, a video mapping of the base and facilities could be made and fed back to the AEF Center. This quick turnaround of information will allow even the first follow-on teams to have a virtual reality look of what to expect when they arrive. This is especially critical if the deployment includes air base defense responsibilities of patrolling outside the base perimeter.

Conclusion

The threats facing AEF deployments are real and a single enemy or terrorist ground attack could have devastating consequences. The continuity gap caused by the continuous rotation of virtually all the experienced force protectors out of established AEF locations is not going to change in the near term. But the fact is, attempting to secure the AEF force with an entirely new

set of people every 90-days creates a very vulnerable situation because defenders constantly lose the advantage of having a superior knowledge of the local terrain. The enemies of the US are not naive and they know this fact well. To think they will not exploit this weakness when planning future terrorist actions against deployed forces would be naive on the part of US military leaders.

To protect the force, the benefits of technology must be harnessed to train and prepare those performing the force protection mission. But simply investing resources into training technologies or using the systems for the sake of using them is fruitless. Instead, a clear vision must be established on how these technologies can be used to move an individual or team from a starting level of ability to the point the continuity gap is sufficiently reduced. Focusing training on reducing this continuity gap, supporting SMART FP, and utilizing the new CamSys technology are all essential to reducing the vulnerabilities the AEF rotations are creating in force protection.

Glossary

AEF	Aerospace Expeditionary Force
AEW	Aerospace Expeditionary Wing
AF	Air Force
AWACS	Airborne Warning and Control System
CATS	Combat Arms Training Simulation System
CBT	Computer Based Training
CONUS	Continental United States
DGPS	Differential Global Positioning System
DMT	Distributed Mission Training
DOD	Department of Defense
FP	Force Protection
FPIP	Force Protection Internet Portal
FPSP	Force Protection SIPRNET Portal
JSS	Joint Simulation System
NCO	Noncommissioned Officer
OPSTEMPO	Operations Tempo
PERSTEMPO	Personnel Tempo
RAF	Royal Air Force
SAC	Strategic Air Command
SIPRNET	Secret Internet Protocol Router Network
SFG	Security Forces Group
SMART FP	Simulation, Modeling, and Analysis to Ready the Team for Force Protection
STEVRE	Soar Training Expert for Virtual Reality Environments
TROA	Tactical Area of Responsibility
US	United States
USAF	United States Air Force

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